DEPARTMENTS

OF NOTE 3
Where NIH clinical researchers study.
Jack Paradise’s latest thoughts on ear tube placement.
Learning to do more with less in Malawi.

INVESTIGATIONS 8
A different note from mom—this one is written on DNA.
Tracy Davido wins a big national student research award.
Bladders aren’t as simple as you might think.

MATCH LIST 33
Where the Class of 2001 ended up.

ATTENDING 34
P. S. Reddy has helped tens of thousands of rural Indians become healthier.
Street rounds with Patrick Perri.

ALUMNI NEWS 37
Class notes.
Pilot and physician Paul Turnquist, MD ’94.

LAST CALL 40
Another match.

FEATURES

Garbled Messages 12
A complex game of telephone tag may lead to neuronal death, and Parkinson’s.
COVER STORY BY EDWIN KIESTER JR.

Eye of the Storm 16
Alum Paul Paris’s team runs the equivalent of an emergency medicine control tower at the top of Scaife.
PHOTO ESSAY BY MARTHA RIAL
AND MARGARET C. MCDONALD

They Won’t Soon Forget 21
Somebody should make a TV show out of this stuff. Alumni tell ER tales.
FOLLOW UP BY MARK JACOBS

Muscle Bound 22
Arnold Schwarzenegger just got more interesting. A Pitt researcher has found a fountain of youth—stem cells, that is—in muscle.
BY ROBERT MENDELSON

No Larger Than Life 28
When Georgia Duker and James Johnston go home, it’s not unusual for the conversation to turn to how to reach students. Maybe that’s why their names come up almost every time the school collects nominees for teaching awards.
BY DOTTIE HORN

CONTRIBUTORS

MARTHA RIAL— (“Eye of the Storm”) Here’s one way to get your bachelor’s degree: First, win a Pulitzer. It worked for Martha Rial. A day after garnering the 1998 Pulitzer in spot news photography for documenting the conflict in Africa’s Great Lakes region, she got a call from her “almost” alma mater. (Rial had left school when just two classes shy of receiving her diploma.) She instantly became a member of Ohio University’s School of Visual Communications Class of ’98 and is the school’s first female graduate to have won the notable prize.
MARGARET C. MCDONALD— (“Eye of the Storm”) Her cell phone didn’t reach Pittsburgh from Budapest, Prague, Dublin, Ankara, or Beirut—still she delivered her story to us in time for this issue. Margaret McDonald, assistant vice chancellor for academic affairs, health sciences, is often somewhere else yet still manages to be an invaluable behind-the-scenes champion for this magazine. We’re happy to present her debut Pitt Med byline.

COVER
Charleen Chu is determined to pinpoint the molecular villain that holds a half million Americans captive in their own bodies. (Photo of the late Claude Scott—a father, teacher, and Parkinson’s patient—by Marc Esser. Reprinted with permission from the Parkinson’s Alliance.)
One call home from my daughter Raleigh, who at the time was an undergraduate at Wesleyan, sticks with me: “Dad, you would love my lit professor!” She was right. Franklin Reeve, her professor, had in fact taught me years before when I was at Columbia, inspiring me to major in Russian literature and to revel in it to this day. (Reeve’s clarity and elegance were passed down to his celebrity son, Christopher, whose words at a recent Pittsburgh conference moved many a scientist, as you will see in our p. 22 story.)

I would bet that my image of Professor Reeve exhorting me to learn the Russian language so that I could fully appreciate Pushkin is as clear as Raleigh’s. We don’t ever forget exceptional mentors. I’ve been lucky to have so many: my mother, a teacher herself; the headmistress of my high school; Lionel Trilling, another literary giant and my undergraduate advisor at Columbia—and there was Clifford Pilz. Pilz was a crusty, irascible, and occasionally fearsome VA internist who came from a long tradition of physicians employing their clinical senses before they reached—as they might now—for the microarray and the confocal microscope.

He would have us read a daily lesson in Bailey’s *Physical Signs in Clinical Surgery* (1927) as if it were the Talmud. Here is Pilz quoting Bailey on aortic aneurisms:

> It is often a perplexing problem to decide whether the pulsation of an abdominal swelling is transmitted from a neighboring artery or whether the swelling itself is pulsating. Great help can be obtained by fixing two match sticks with plasticine onto the skin overlying the swelling. If the pulsation is transmitted, the movement of the matches during each throb of the pulse is vertical, and the matches remain parallel with each other. On the other hand, if the swelling is truly expansile, the excursions of the match heads are deflected to the left and to the right.

Of course! The knowledge that Pilz passed along to me still has a freshness and immediacy, even at my age certaine. He believed that most physical diagnosis could be accomplished with a tongue depressor, flashlight, pencil, magnifying glass, speculum, stethoscope, thermometer, tendon hammer, set of finger cots, tape measure, and, of course, a box of wooden matches. Pilz feared, however, that the modern graduate of medicine would soon approach a routine outpatient visit with a mobile pantechnicon, and be unable to formulate a diagnosis without this aid.

During the graduation rush we pause to salute the men and women who, by their very example, fan the flames of inquiry. Those recognized with teaching awards are usually repeat offenders—much like Professor Reeve. It is notable that Paul Rogers, of critical care medicine, was honored three times over this year; it’s equally revealing that Georgia Duker and Jamie Johnston, whom you’ll get to know in this issue (p. 28), were recognized for their dedication to our students yet again.

The recipe for unforgettable teaching seems to be part genius, part passion, part scholarship, part intimacy, and perhaps, part magic. My compliments to the chefs.

Arthur S. Levine, MD
Senior Vice Chancellor for the Health Sciences
Dean, School of Medicine
They’ve Arrived

In 1907, a group of upstart clinical investigators were chatting on the Atlantic City boardwalk during a conference break. Heads nodded in agreement: They needed a venue for presenting papers, yet they hadn’t reached the age of 45, so they couldn’t be considered for acceptance into the revered Association of American Physicians. So they decided to form their own organization—the American Society of Clinical Investigation (ASCI). As the century unfolded, ASCI would set the standards for emerging generations of clinical researchers, claiming 15 Nobel and 216 Institute of Medicine laureates among its alumni. This year, the elite ASCI inducted two more University of Pittsburgh professors: Alan Wells, who is the Thomas J. Gill III Professor of Pathology, and Augustine Choi, chief of pulmonary, allergy, and critical care medicine. Wells is investigating why and how cells move around—especially in relation to tumor invasion and wound repair. Choi’s work focuses on lung injury. “He is probably one of the very brightest pulmonary researchers in the country,” notes Mark Zeidel, chair of medicine and also an ASCI member. —EL

FOOTNOTE
A glossary in this year’s Scope and Scalpel program offers some new definitions, among them—

S4: Mythical extra heart sound caused by chronic hypertension.
“Um, sure Dr. Shaver, I can hear the S4 . . . just before the S5, right?”

NIH RESEARCHERS HIT THE BOOKS AT PITT

There are only two places in the country where the National Institutes of Health (NIH) sends its clinical investigators for training. One is Duke University. The other is Pitt. The School of Medicine’s new Clinical Research Training Program was designed to train Pitt fellows and junior faculty; now NIH researchers will participate through intensive summer course work in Pittsburgh and teleconferencing. —DH
Faculty Snapshots

Does the web play a big role in keeping Allegheny County residents healthy? “Reports of the information technology revolution are greatly exaggerated. It doesn’t mean it’s not going to happen. It hasn’t happened here yet,” says Charles Friedman. The professor of medicine and director of the University of Pittsburgh School of Medicine’s Center for Biomedical Informatics served in an advisory capacity on a study of how county residents use the web for health care. Some findings of the effort undertaken by Pitt, the National Library of Medicine, and the Jewish Healthcare Foundation: 50 percent of county residents relied only on their doctors for health information; 25 percent sought information to supplement what they received from their doctors, most often from the Internet, books, and magazines. Fewer than 3 percent reported that their doctors have referred them to web sites.

In the United States, one in 75 people contracts melanoma, and 7,800 die from the disease each year. In the May 1 issue of the Journal of Clinical Oncology, John Kirkwood, professor of medicine, reported that patients with advanced melanoma who were treated with interferon alpha-2b following surgery had a relapse rate 33 percent lower than those treated with the GMK anti-melanoma vaccine following surgery. In addition, those who received the interferon treatment had a 33 percent lower death rate than those treated with the vaccine. Kirkwood’s earlier research led the Food and Drug Administration, in 1995, to approve interferon alpha-2b as the first adjuvant therapy for high-risk melanoma.

In April, colleagues honored the life and career of Thomas Starzl, distinguished service professor of the health sciences. Scientists from around the world presented papers for a Festschrift and celebrated the man who performed the world’s first successful liver transplant in humans in 1967 and has been making transplantation breakthroughs ever since. “The biggest limitation now is the shortage of organs,” says Starzl. His current research focuses on how to make animal organs work in humans. “What we’re trying to do is insert human genes into pigs and then to clone the pigs. We’re working with the people who cloned Dolly. . . . If you can clone, you can produce a lot of pig donors.” —DH
Becker: Expect the Unexpected

“You have to keep an open mind, to be ready for the unexpected.” Dorothy J. Becker (Fel ’76) will tell you that is the mark of a good clinical researcher.

Becker, who won the Medical Alumni Association’s 2001 McEllroy Award, which recognizes outstanding physicians who did their training here, is more than willing to be surprised.

The director of the division of endocrinology and of the diabetes section at Children’s Hospital of Pittsburgh arrived from her native South Africa in 1974 for a two-year endocrinology fellowship at Children’s. Initially interested in nutrition and hormones, Becker has contributed to the medical community’s understanding of complications associated with diabetes in childhood; she’s also pursuing ways to predict the onset of the disease in those at risk. And recently, she was the coauthor of a study on the relationship between diabetes and multiple sclerosis.

It has been 25 years since Becker completed that endocrinology fellowship. What has kept her in Pittsburgh is the chance to collaborate with physicians here. “The big thing is that those relationships,” she says, “have made our research great for two decades.” —JL

THE 52-MILE, 800-ARTICLE MAN

On Wednesdays at 4:30 a.m., Ernest Moore, MD ’72, sets out into the cool morning darkness with running partners from his lab. It’s part of the professor of surgery at the University of Colorado Health Sciences Center’s spring training for his annual 52-mile ultramarathon. During the four-hour run, the topic of conversation is likely to turn to research pursuits, making it a doubly productive time for Moore, who has published nearly 800 articles throughout the past 25 years.

This May, the prolific Moore won the Hench Distinguished Alumnus Award given by the Medical Alumni Association.

David Feliciano, professor of surgery at Emory University in Atlanta, Georgia, notes that Moore is the author of one of the most significant articles ever written on hepatic injuries in modern trauma. That review article, published in the American Journal of Surgery in 1984, helped pave the way for a major shift in how surgeons treat liver trauma—from intervening operatively in almost all cases to a much more hands-off approach.

Other studies by Moore helped change the way surgeons treat trauma to the spleen and blunt rupture of the descending thoracic aorta. He is now investigating how intercellular signaling can lead to multiple-organ failure (one of the most common reasons that patients die in the intensive care unit after trauma). —DH

FLASHBACK

“It was] Thomas Parran who led the nation after World War I to develop a strategy for controlling venereal diseases. He was courageous, and if you think that it’s difficult for the surgeon general today to talk about sex, Thomas Parran was not even allowed to say the word ‘syphilis’ on the radio. . . . When he left the Office of the Surgeon General in 1948, [Parran] came here to the University of Pittsburgh to be the first dean of the Graduate School of Public Health.”

—Surgeon General David Satcher, speaking at the University’s 2001 Commencement
As the new chair of the Department of Pediatrics, David Perlmutter plans to emphasize fellowship training. He notes: “To train the next generation of academic pediatricians, we need to recruit physician-scientists who can be mentors.”

The pediatrician’s own research into alpha-1-antitrypsin deficiency, which can cause liver disease in children and emphysema in adults, has lent insight into a cellular process implicated in many diseases. “There is a mechanism in every cell whereby the cell can recognize when a protein is not folding correctly and dispose of it,” says Perlmutter. He refers to this as the quality control mechanism of the cell; his lab has offered some important information on how that mechanism works.

The new director of the Office of Technology Management, Christopher Capelli, plans to further educate Pitt faculty and staff about how technology is turned into a commercial product—and the role they can play in that process. “Technology doesn’t sell itself,” says Capelli. “The people who know the most about the technology—the scientists, the faculty—are the ones who sell it.” Capelli has a BS in engineering and an MD. He holds eight US patents.

Bernard Goldstein, former director of the Environmental and Occupational Health Sciences Institute, in New Jersey, will join the Department of Medicine. Most of his time, however, will be spent down the street; he is now dean of Pitt’s Graduate School of Public Health. He comes to Pittsburgh from New Jersey by way of Malaysia. Global issues in environmental medicine are among his most recent fascinations, as is the interface between science and public policy. Goldstein’s talents are well known in public health sectors: He was the Environmental Protection Agency’s assistant administrator for research and development and chaired the Institute of Medicine’s (IOM) Role of the Physician in Occupational and Environmental Medicine effort and the National Institutes of Health’s Toxicology Study Section. He is a member of the IOM.

—DH & EL

**OFF THE RACK**

**OF NOTE**

**Appointments**

As the new chair of the Department of Pediatrics, David Perlmutter plans to emphasize fellowship training. He notes: “To train the next generation of academic pediatricians, we need to recruit physician-scientists who can be mentors.”

The pediatrician’s own research into alpha-1-antitrypsin deficiency, which can cause liver disease in children and emphysema in adults, has lent insight into a cellular process implicated in many diseases. “There is a mechanism in every cell whereby the cell can recognize when a protein is not folding correctly and dispose of it,” says Perlmutter. He refers to this as the quality control mechanism of the cell; his lab has offered some important information on how that mechanism works.

The new director of the Office of Technology Management, Christopher Capelli, plans to further educate Pitt faculty and staff about how technology is turned into a commercial product—and the role they can play in that process. “Technology doesn’t sell itself,” says Capelli. “The people who know the most about the technology—the scientists, the faculty—are the ones who sell it.” Capelli has a BS in engineering and an MD. He holds eight US patents.

Bernard Goldstein, former director of the Environmental and Occupational Health Sciences Institute, in New Jersey, will join the Department of Medicine. Most of his time, however, will be spent down the street; he is now dean of Pitt’s Graduate School of Public Health. He comes to Pittsburgh from New Jersey by way of Malaysia. Global issues in environmental medicine are among his most recent fascinations, as is the interface between science and public policy. Goldstein’s talents are well known in public health sectors: He was the Environmental Protection Agency’s assistant administrator for research and development and chaired the Institute of Medicine’s (IOM) Role of the Physician in Occupational and Environmental Medicine effort and the National Institutes of Health’s Toxicology Study Section. He is a member of the IOM.

—DH & EL

**BUMPER TO BUMPER**

Sometimes there’s nothing like a good automotive metaphor. At a May meeting of 100-plus professors and students, the call for a “tune-up” of the curriculum elicited discussion as well as nods of support. To ensure that Pitt med graduates are among the best prepared in the world, the school holds this novel Curriculum Colloquium each year. Leaning across tables, attendees passed microphones to one another, considering the triumphs and trials of problem-based learning, the need to deepen the scope of genetics study, a proposal to increase scholarly research opportunities, among other issues. While participants noted that Pitt’s curriculum is hailed as model, there was also a growing recognition that it was time to make changes to stay ahead of the pack.

**Lazarus department store employees painted 55 butterfly mobiles that will hang in oncology patient rooms at UPMC Presbyterian and Shadyside.**

**Perlmutter**

**Goldstein**

**Patricia Nagle**

**Joe Kapelwski**
Gangrene is creeping up Ben Kamanja’s left leg. He needs an amputation below the knee.

Kamanja arrived at the Central Government Hospital in Lilongwe, the capital of Malawi, three weeks ago. The surgeon cannot amputate his leg until Kamanja has found someone to donate the blood needed for the operation.

Every day that Kamanja’s operation is postponed, the gangrene spreads. When the doctor visits, he asks Kamanja, “Have you found blood yet?”

Kamanja must find his own donor, because in Malawi, the blood banks are empty.

Malawians no longer give to the blood banks, because if they did, their blood would be tested. If they were tested, they might find out they were HIV positive.

Mitsu Anderson, who graduated in May from the University of Pittsburgh School of Medicine, met Kamanja during his four-week clerkship in Malawi this spring.

Kamanja likely developed gangrene from a minor wound that never received medical attention. The disease spread from his foot to his leg in the weeks he waited before coming to the hospital. Such delays in treatment are commonplace in a country where there is only a handful of doctors.

“The low physician-to-population ratio has concrete manifestations: Patients present very late in their disease,” says Anderson. He recalls a boy whose bone cancer disfigured his face and a man whose infected head wound became a pus-filled protrusion the size of a strawberry.

“The diseases you see there are so glaringly obvious,” he says.

With Kim Dovin, Susan Rubin, and Lauren Weintraub—other Class of 2001 students who were in Lilongwe—Anderson discovered what it was like to try to care for patients with few effective treatments available. Twice, he declared children dead after their hearts failed because of malaria-induced anemia. A blood transfusion probably would have saved them—but again, there was no ready source. He saw many with AIDS; they received Panadol, an aspirin equivalent, and antibiotics and antifungal agents to fight associated infections. Because of limited resources,

Anderson heard patients being told again and again, “I’m sorry, there’s nothing we can do for you.” “Seeing so much death and destruction in the hospital setting can be emotionally traumatizing,” says Anderson. “It was very hard.”

The health care professionals he worked alongside amazed him. He assisted a surgeon whose repertoire of procedures was extensive: “On any given day, I would assist him on, say, a very difficult pediatric GI surgery, a neurology surgery, an adult breast cancer surgery. It was mind-boggling, everything he could do.” US surgeons are likely to focus on a particular body region or organ system.

Five students have already signed up for the Malawi clerkship next year. The program has gotten off the ground with the help of Thuy Bui, who directs the health care to underserved populations office.

Anderson, now in a family practice residency in Florida, says he’ll be looking for more opportunities to work overseas.

In Malawi, Mitsu Anderson saw many patients in advanced stages of disease that would be rare in the United States:

“In’s going to open my mind to a whole host of possibilities of what could be ailing a patient.” [LEFT: Advanced thyroid cancer. RIGHT: An untreated pyogenic granuloma—tissue inflammation due to infection]

In Malawi, Mitsu Anderson saw many patients in advanced stages of disease that would be rare in the United States: “It’s going to open my mind to a whole host of possibilities of what could be ailing a patient.” [LEFT: Advanced thyroid cancer. RIGHT: An untreated pyogenic granuloma—tissue inflammation due to infection]
J. Richard Chaillet studies chemical additions to DNA—like notes in the margin of a book—that are passed along as DNA replicates. Most of those notes come exclusively from our mothers.
When just about two days old, a mammal’s embryo is only eight cells large. Although at this early stage it’s impossible to tell what part of the developing embryo one of those eight cells might become—a giraffe’s leg or a human’s brain—they’re getting important instructions that will determine their fate: The DNA they contain is undergoing genomic imprinting, a process that places molecular marks on our DNA.

The work of J. Richard Chaillet, a University of Pittsburgh researcher and scientific director of Pitt’s new Transgenic and Chimeric Mouse Facility, suggests that these chemical marks greatly impact the survival and health of the fetus to be—even though they are made days before the embryo implants in the uterus and well before critical organs and systems start to form.

The marks that Chaillet studies don’t make up the genetic code itself, but chemical additions to it—like notes in the margin of a book—that are passed along as the DNA replicates.

These genomic notes usually serve to shut off expression of the genes they mark, but it’s not yet clear why. Geneticists do know we each have the same notes on the same parts of our genomes, and that most of the notes are first written on the DNA of the unfertilized egg and inherited from our mother. Only a few notes (genomic imprints) are inscribed first on the sperm’s DNA. Most imprints are passed along the maternal line to offspring, where they continue to mark the embryo’s genetic material from the earliest moments of development.

To understand how an embryo gets its genomic notes from its mother, Chaillet, an associate professor of pediatrics and human genetics, and colleagues created a line of mice without a gene known to play a part in imprinting called Dnmt1o (a methylating protein that female mice usually develop very early on). When Chailllet’s Dnmt1o-free females were mated, they conceived but produced almost no live births. Most of the fetuses died during the last third of gestation. Chailllet traced these deaths back to a failure to take notes, at the molecular level, that is.

His experiments showed that imprinting—the chemical marginalia step in DNA’s editorial process—was not taking place as the embryos’ eight cells divided into 16: Only about half of the DNA in embryos without Dnmt1o had been annotated. Chailllet concluded that Dnmt1o is responsible for jotting notes on DNA as it replicates and rearranges into new double helices during that one, short stage of development. Because all of the organs and tissues of the embryo eventually result from the further division of just those few cells, this single small error in note taking has devastating results. But not immediately. It takes some time—many, many cell divisions—for enough nonimprinted cells to accumulate and compromise fetal development. Chailllet suspects that imprinting blanks such as these might explain some mysterious deaths of human fetuses in late gestation and of infants just after birth.

In normal mice, the Dnmt1o protein is made when the mouse mom herself is just an embryo, when her own eggs are developing. With just one more cell division, the protein (green) will make its way from the cytoplasm into the nuclei (blue) to do the crucial job of imprinting DNA. Chailllet has shown this very early developmental step helps ensure that the embryo grows normally.

The protein is stored outside the nucleus of the cell in the cytoplasm until after the egg is fertilized, then it goes to work directing imprinting in the embryo. The Dnmt1o journey from mother to offspring is an example of a larger phenomenon called maternal effect, the notion that the embryo’s development is directed by substances made by the mother’s DNA (like Dnmt1o) rather than by the embryo’s own.

Maternal effect is known to be a factor in the development of some lower organisms. In fact, Christiane Nüsslein-Volhard and Eric Wieschaus earned a Nobel prize for, in part, their work on maternal effect in fruit flies. Chailllet and his team are one of the first to demonstrate it in mammals.

For more information:
On Chailllet’s recent breakthrough: http://www.cell.com/content/vol104/issue6
On the Transgenic and Chimeric Facility: http://www.genetics.pitt.edu/tcmf/
INVESTIGATIONS

FIRST PRIZE

IT'S A CLINICAL-RESEARCH CAREER AFTER ALL

BY ROBERT MENDELSON

It was a beautiful morning at Disneyland, yet she wasn’t thinking about having fun. Tracy Davido, MD ’02, was thinking about how to describe, in just 10 minutes, a new method for early detection of bladder cancer.

She had checked out of her hotel, but she still had some time before her presentation. So there she stood, dressed in a business suit, practicing her delivery out loud—amid bikini-clad vacationers at one of the resort’s swimming pools. It turns out she had a poolside audience of one, who interrupted her to make a comment: “Ahuh, Ahuh,” said Goofy, “you’re working too hard.”

Davido laughed. Then, the University of Pittsburgh medical student resumed practicing for a research contest presentation at an American Medical Student Association meeting. Goofy shouldn’t take it personally. It’s not easy to derail Davido.

Just a year before she’d had some significant distractions. That’s about the same time the business major from Cleveland State started thinking about trying her hand at research. Her third year of med school was concluding, but unlike her classmates she wasn’t filling out residency applications. “I needed to bide some time,” she admits. She told Peter Ferson, a professor of surgery who advises her, that she wanted to take time off to do research. He suggested she put in a couple of months of research rotations. She had been thinking of more like a year. Davido, 34, didn’t want to delay her schooling longer than necessary, yet her life had become complicated. Her husband feared he was about to lose his job because his company was for sale. She explained to Ferson, “My husband is interviewing all over the country. How can I apply for residency when I don’t know what city he will be in?”

“Maybe you can work it out so he can join you in a city like New York? There are so many hospitals there,” answered Ferson.

There was another problem. The Davidos had just been awarded custody of two school-age children from a previous marriage. They weren’t sure they were ready to uproot just then. Ferson needed no further explanation. This seemed the perfect time for Davido to take a year exploring the research world.

Davido looked around and learned Robert Getzenberg at the University of Pittsburgh Cancer Institute wanted a research assistant. Then she started to have doubts. She remembered the Yale and Hopkins bio majors she sat beside in class and began to think Getzenberg wouldn’t be interested in her.

“When I met him,” says Davido, “I just blurted out, I’m 34, I’ve never done research; I was a business major. I’m willing to work for just about nothing, but if you don’t want me I understand.”

“I don’t care how old you are,” he replied. “If you’re willing to put in a year of research, I think you will pick it up as you go. And, as a business major, maybe you can provide a unique perspective.”

Less than a year later she was at the Disneyland meeting. When the moment arrived for her presentation, she was nervous. “Robert had loaned me his laser pointer, but when I reached in my pocket to get it, I realized my hands were shaking. So I just left it in there and did the Vanna White thing.”

Vanna never had to explain “Utilization of urine-based BLC-A4 nuclear matrix protein assay in early detection of bladder cancer in an MNU animal model.” Davido did. She explained that before bladder cancer is detectable, a protein in the cell becomes aberrant. Getzenberg has developed an antibody that can detect this protein. Davido injected rats with a carcinogen to find out when that protein could be detected. “Cells fall off the bladder into the urine, and that isn’t such a great environment for a cell,” she says, “so they open up and spill out their proteins. I treat a urine sample with antibodies and, Bang!, if that protein is there, we’ll see it.” In rats, she saw it at week eight—12 weeks before cancer can be detected in cells, and long before any symptoms develop.

“It’s incredible,” she says of Getzenberg’s antibody. She foresees a noninvasive, completely risk-free test: “With a little urine in a cup, we can find out if bladder cancer is imminent.” A clinical trial is now under way.

Davido won first prize for a basic research presentation in the national competition. (Two other Pitt med students, Morad Askari and Susan Morine, also were invited to present at the meeting.)

This summer, it’s back to medical school for Davido. Things have settled down. Her husband’s company is no longer for sale, and the children are adjusting. But Davido still isn’t sure where she will apply for a residency: “A year ago I was thinking solely clinical, now I’ve become a physician researcher.

“I want to be part of pushing the science forward and then see the end result of all that effort when the patient comes to my office.”
Your bladder is filling, filling, filling.

Yes, you may be excused. But if you would like to learn about the very basics of how we normally are able to postpone such necessities, you should find out more about the work of Gerard Apodaca. Apodaca, associate professor of medicine and cell biology and physiology at the University of Pittsburgh, is figuring out how the lining of the bladder works. His focus is its innermost cell layer. These “umbrella cells” have a dome-like region facing the urine and a smaller stalk region protruding into the intermediate cell layer. Not much is known about them.

“If you look at the number of papers that deal with the umbrella cells and their cell biology, there’s very few, less than 100 papers, whereas with other topics there can be thousands of papers,” says Apodaca.

To understand his work, picture the bladder: When the onion-shaped organ is empty, its tissue is full of folds. The part of the umbrella cell that faces the urine, called the apical surface, is also wrinkled with folds. As the bladder starts to fill, the folds in the tissue open, as an umbrella would, to accommodate increasing volume. Next, the apical surface unfolds, becoming smooth and flat, and the cell elongates. Then, a third mechanism for further expanding the holding capacity of the bladder comes into play.

Imagine a table with a leaf lying in wait just underneath the surface. The leaf can be pulled from below to expand the surface area of the table as needed.

The umbrella cells have a similar reserve capacity—in the form of thousands of vesicles that are concentrated below the apical surface. As the need arises to fit more in the bladder, the vesicles are pulled up and fused into the membrane, expanding its surface area.

To study these vesicles, Apodaca created an experimental model that allows him to mimic the bladder filling. He takes a rabbit bladder, cuts a piece of the tissue, and places it in a chamber. The chamber enables him to stretch the tissue, subjecting it to the same amount of pressure that is present as the bladder slowly fills. He stretches the cells for five hours. As a control, he uses rabbit bladder tissue that is not stretched. He compares the stretched cells to those that have not been stretched.

Previous researchers had calculated that the vesicles have the ability to expand the surface area by 300 percent. Using his experimental model, Apodaca was able to study what really happens in the cells. After stretching the cells for five hours, nearly all the vesicles had fused into the membrane—yet the surface area of the membrane had increased by only 50 percent.

“Where’s the other 250 percent? That’s the question we had to answer,” says Apodaca.

He did additional studies and found the answer: Stretching sets in motion an internalization process. Bits of membrane from the urine-facing surface are pulled into the cell and taken to degradation compartments where they can be broken down.

“At this surface that’s facing the urine, if you don’t stretch the cells, they don’t internalize anything,” he says.

“It’s only when you stretch them that that process gets turned on.”

The two processes happen simultaneously. As the bladder is stretched, vesicles go out to the membrane. At the same time, bits of membrane come into the cell. The resulting increase in surface area is only 50 percent.

The two processes may serve to continually “rebuild” the membrane—limiting the amount of time it is exposed to urine, which has toxic elements.

Apodaca’s work in the long run may lend insight into illnesses such as interstitial cystitis, a painful disease caused by abnormalities in the bladder lining. What fascinates him, however, are the mysteries of the umbrella cells—which face a noxious environment and the day-in, day-out routine of being stretched. He is determined to figure out how they work.

FOR MORE INFORMATION:
http://apodaca2.dept-med.pitt.edu/
When neurons can’t receive messages from other cells, they die. Pitt’s Charleen Chu is uncovering how communications might get bungled and bring on the condition that holds a half-million Americans hostage. (LEFT: Photo reprinted from The Parkinson’s Alliance’s anthology, Voices in the Parking Lot)
Before I was born, my grandfather developed Parkinson’s disease. I grew up retrieving things that had fallen from his trembling fingers, helping him in and out of chairs, adjusting my little-boy strides to his shuffling gait. “Granddaddy” had survived the 1918 flu, but like many victims of that worldwide pandemic, later contracted a brain inflammation that led to the Parkinson’s symptoms.

Back then, conventional wisdom said that Parkinson’s was confined to the flu victims, an unfortunate artifact of the pandemic. Once that generation passed away, the disease would pass with it. “One specialist staked his whole career on the idea that Parkinson’s would disappear by 1980,” notes neurologist J. William Langston of the Parkinson’s Institute in Sunnyvale, California. As today’s half-million American victims—some estimates count as many as 1.5 million—attest, there was no such vanishing act. Further, the characteristic tremors, rigid posture, and halting speech of Parkinson’s are seen, or at least diagnosed, more and more frequently. As flu victims died off, new cases appeared, new explanations for the disease were offered, and new mysteries about it arose. Why, in one of the more bizarre puzzles, are cigarette smokers less likely to show Parkinson’s symptoms than nonsmokers? Why is the disease found more often in rural populations than urban, in northern latitudes than southern, in white populations than many others? Is it genetic? Environmental? Both? “Parkinson’s disease,” states the website of the National Institute of Neurological Disorders and Stroke (NINDS), “may be one of the most baffling and complex of neurological diseases.”
What causes Parkinson's symptoms is well known. Certain cells in a brain area called the substantia nigra ("black substance") begin to die off. These cells normally produce dopamine, a neurotransmitter, or brain chemical, which carries messages between neurons; dopamine feeds the motor-system autopilot, controlling skills we have learned to perform automatically, like walking. As their dopamine supply declines, people shuffle, stumble, rise from a chair only with difficulty, and assume rigid postures and frozen facial expressions. The best, if only semisuccessful, treatment, the "gold standard" Langston calls it, has been a medication to boost dwindling dopamine called levodopa, a.k.a. L-dopa. L-dopa works wonders at first but over time produces side effects that require less effective dosages. Eventually the symptoms may return, sometimes more violently than before.

But what causes these cells to die? At the very basic level, what derangement of human chemistry disrupts and brings on the death of the dopamine-producing cells?

In a set of laboratories sandwiched between Scaife Hall and UPMC Presbyterian, Charleen Chu, a 36-year-old University of Pittsburgh assistant professor of pathology, is energetically pursuing that question. Chu, in her third year at Pitt, is zeroing in on the molecular mechanisms by which brain cells tell each other what they need to know to stay healthy and functioning and what, in the case of dopamine-producing cells, could push that process off track. She is determined to uncover where the communication breaks down.

Chu has a theory about what might be gradually killing off bits of substantia nigra: Her favorite potential villain is oxidative stress—a case of the routine bodily event of oxidation getting out of hand.

When a substance combines with oxygen, as occurs continually in every cell in the body, one chemical byproduct may be an unstable molecule called a free radical. Free radicals lack electrons from proteins that help to amplify and relay messages within the neuron, those neurons will have difficulty interpreting messages from other brain cells. (The intercellular signaling process acts as a sort of a language system.) And if they can't communicate, those neurons aren't going to last long.

Further, it's known that Parkinson's patients have elevated levels of brain iron, which may somehow exacerbate the oxidation process. Anyone who has been in the dismaying position of watching a car fender rust has observed that iron is easily oxidized.

Chu's goal, she says, is to map out the pathway and mechanism by which the oxidative molecules directly affect the neuronal signaling process. She pauses and smiles. "But we're not quite there yet."

Chu has been exploring the brain's signaling system since her postdoctoral days at Duke University in Durham, North Carolina, where she investigated signaling in brain tumors. The Carson, California, native once aspired to be a science journalist, "at Banning High School, put that in." Chu later switched to pursuing science itself, garnering an AB from Harvard, then an MD, PhD, and neuropathology training at Duke. She chose Pitt, she says, "because of the incredibly diverse array of research being done in neuroscience here—applied, basic, developmental."

The other practical reason, she reveals, with another smile, is Tim Oury, her husband. Oury also received his MD and PhD from Duke, and came to Pitt with her as an assistant professor of pathology. (Chu's sister, an orthopaedic surgeon, ended up at Pitt as well.) Oury is investigating oxidative and inflammatory processes in lung and brain diseases. The couple's research interests overlap. In her office, Chu waves toward portraits of their children, Kevin, at 5, and Nadine, at four months. "Our hobbies are our research and our kids," she says.

"Tim is a very creative scientist," she says. "When I first came here I was undecided about whether I was going to look at signaling in brain tumors and continue my postdoc training or somehow think of a way to blend my training into neurodegenerative disease." Her husband pointed out that her knowledge of signaling might give her an interesting perspective on neurodegenerative disease—particularly since people were beginning to think that mixed-up signals might play a role.

"That got me going," says Chu. "I recognized that Alzheimer's was being studied all over, but the actual molecular mechanisms of Parkinson's had not been studied much."

She leans against a lab bench and gesticulates excitedly as she explains the somewhat arcane sequence of events that led her to a surprising breakthrough. She was studying the effects on cells of a chemical called 6-hydroxydopamine, which is related to dopamine and has a similar molecular structure—though it is known to be toxic. The chemical has been isolated in the urine of Parkinson's patients and appears to be made by the body. For some reason, its presence is elevated in those treated with L-dopa. Chu hypothesized that the

It was understood that neurons needed to talk to other cells to stay alive. Now Chu was learning that if they talked to each other too much, that didn’t leave them any better off.
think the consequences of the signal’s remaining on could be very important,” says Chu. “We think it kind of derails the cell’s metabolism and sends it down the pathway to death.”

There have been many zigs and zags, derailments, in pursuit of Parkinson’s since my grandfather’s day. Indeed, it is now said that 1918-flu victims didn’t suffer true Parkinson’s at all, but parkinsonism, defined as Parkinson’s-like symptoms triggered by a different cause. (Many disorders mimic Parkinson’s; only the most skilled neurologist can diagnose it correctly more than 90 percent of the time.)

In the 1980s, Langston, then at Stanford University, uncovered the case of the “frozen addicts,” drug users who had injected home-cooked heroin and developed classic parkinsonism. The offending contaminant, an industrial compound known as MPTP was isolated; its discovery gave researchers an extraordinary tool—they were able to model Parkinson’s symptoms in laboratory animals and watch the results. Since then, there has been an avid search for an environmental cause of the disease. A recent paper out of Emory University in Atlanta, Georgia, reported laboratory animals developing parkinsonism after being given rotenone, a common gardening pesticide. Scientists have also found that 15 to 20 percent of Parkinson’s patients have a relative with motor symptoms, such as tremors. And they’ve identified genes for two rare, early-onset forms of the disease.

Therapy has had an equally uncertain course. Great hopes have been raised for cell transplants to replace the damaged neurons. Recent efforts have focused on injecting neurons from aborted fetuses into patients’ brains. The results were not only disappointing but alarming. About 15 percent of those who received transplants developed frightening symptoms—writhing and jerking which could not be controlled. Transplants, including the injection of embryonic stem cells that have the potential to develop into other cells, are thought to be promising; but investigators who hoped to harvest stem cells from human embryos to pursue these research strategies have run into political opposition. (New, intriguing sources of stem cells have been discovered, however, see p. 22). One National Institutes of Health official noted recently, “We are nowhere near declaring victory.”

My grandfather died at 91, his mobility gradually declining, yet fortunately he aged without the dementia that afflicts many patients in the last stages of the disease. His mind was clear, but he was saddened and baffled by this seemingly inexorable condition. Chu is eager to give today’s patients and researchers some answers and help pave the road to effective therapies. Yet she says of her work, ruefully shaking her head, “I’m afraid there’s no direct application at this point, but understanding the [signaling] process could be very important to designing new therapies.”

Others think she’s onto something, too. In its official summary of research into the causes of Parkinson’s, what does the NINDS list as the first and most likely explanation for the disease’s essential mystery? The theory of oxidative stress.
One day when Paul Paris, MD '76, (far right) was running a second-year class he brought along a new pulse oximeter. Never mind that the subject du jour was lumbar punctures, this photoelectric technology was too neat not to share. Besides, why limit oneself to what’s expected? This line of thinking may be how the chair of the school’s Department of Emergency Medicine found his team running the equivalent of an EM control tower servicing commercial airlines as well as other academic medical centers.
t’s eerily quiet on the top floor of Scaife Hall. The eye of the storm. Think air traffic control room, a compulsive array of Zetron dispatching consoles, computers, monitors, and one TV—always on the Weather Channel or the local news. Calls come in from hospitals, accident scenes, you name it. In fact if you’re having chest pains 30,000 feet above an Indiana cornfield and you’re on the right airline, these folks are likely to be the ones taking care of you. One team fields emergency medicine (EM) calls from Delta and United airlines. Another manages the ground transportation of Pittsburgh Medic Command. Here too is ground control for STAT MedEvac’s 10 helicopters and three fixed-wing aircraft, which can be dispatched to West Virginia or Saudi Arabia. They also transport patients for Johns Hopkins Hospital in Baltimore, and the University Hospitals of Cleveland. They run the busiest medical heliport in the country and the second busiest general heliport after the Pentagon.
Conversations take place within headsets here in the communications hub of the Center for Emergency Medicine. Chatter is rare; talk is sotto voce, although the Scuba Diving, Fire House, and Men’s Health magazines in the restroom hint at off-hours’ interests. When emergency medical physician Ted Delbridge (Fel ’93, Res ’92) arrives at 3 p.m. for his eight-hour shift (there’s a doc in the center 24/7), he settles into a fishbowl-cum-office where he’s accessible but out of the way. Emergency medical technician Susan Sigler is off to the side in a cramped office ready for a call from the commercial airlines Pitt services.

For now though, no calls, so Sigler orders oxygen for patients with chronic respiratory conditions to use on upcoming flights. Delbridge tackles his 50 E-mails. What do you guys want to eat? One of the dispatchers, who looks like a body builder and a leading candidate for the Men’s Health subscriber, offers to make a food run. Most opt for burgers and fries. Sigler’s phone rings—it’s Commercial Flight X, en route to the southeast: “We have a passenger who’s not feeling well. He’s lying on the floor and says he feels faint.” Sigler asks the flight attendant to find a passenger with medical experience and patches Delbridge into the call.
A man onboard identifies himself as a paramedic. “Cool,” says Delbridge, “lay some vital signs on me.” The patient is in his 20s. He’s dizzy, cold and clammy to the touch but says he has no other medical problems. Pulse: regular. While Delbridge listens and jots down a few things, Sigler takes detailed notes for the incident report. The man admits to more than a few drinks the night before. “Give him some orange juice and try to get him up out of the aisle,” says Delbridge. He decides an emergency landing is unnecessary. This time. Out of the 225 or so commercial airline calls they get each month, the physician on duty recommends an emergency landing about 5 percent of the time. Now a dispatcher has MedEvac 9 on the line. They’re flying someone with meningitis to Pittsburgh from a small hospital some three-and-a-half hours away by car. (The helicopters can respond to anything within 150 nautical miles.) The helicopter lands; and the team removes the stretcher while the blades are still turning—“running hot” in EM-speak—and wheels the patient into the hospital. The prognosis is good, though with 50,000 calls to the control room last year, the team doesn’t find out how every patient fares.
At 9 p.m. it’s quiet again. In fact the whole night has been pretty tame according to those who do this every day. Among the routine: a call from the “resident in the jeep” racing to the scene of a shooting; another about a 250-pound child who came down a hill on a scooter, ran into a car, and went over the hood (just a few bruises); and paperwork, always, always. Delbridge turns back to his E-mail and picks up one of his three-hour-old fries. It droops. He eats it anyway: “Cold pizza is better than cold french fries.”

In the communications center, the telephone becomes a piece of specialized medical equipment. It’s the only tool the physician has to decide how to manage a given patient. “To be able to get from the flight attendant or the paramedic the objective things I need, to make them be the eyes and ears, that’s the challenge,” says Ted Delbridge, who serves as medical director of the center with Ron Roth, MD ’82. (Delbridge is shown, seated, in a headset on p. 19. LEFT: EMT Susan Sigler.)
EM SPOTS OF TIME

BY MARK JACOBS

We asked alumni of the University’s emergency medicine (EM) training programs to recall moments in their careers that have stayed with them.

In Pittsburgh’s East Liberty neighborhood, it’s late afternoon in July. A middle-aged couple is walking down the sidewalk. The man trips on a loose brick, falls into the street. A moment later—in the space of a breath or a scream—he’s dead.

When James Adams arrives in the emergency medical services jeep, there is nothing to do. The man’s skull has been flattened by the wheels of a passing tractor-trailer. Adams tries to comfort the wife: “She couldn’t be sedated. She couldn’t be calmed. She couldn’t be consoled.”

That was the call Adams responded to when, early in his second year of residency, he ran radio contact with city paramedics for the very first time. He’d become used to the emergency department, where, as he puts it, staff “can exert maximum control.” Here on the street, it seemed, nobody had any control. The fatal fragility of life at that scene, the arbitrary, instantaneous accident that could take it away, began to change the way Adams viewed medicine and viewed life.

James Adams (Res ’91) is chair of EM at Northwestern University School of Medicine, in Chicago, Illinois, and chief of the emergency department at Northwestern Memorial Hospital.

Near Carnegie Mellon University, a 13-year-old boy is riding his bike. Blazing downhill, he loses control, smashes into a tree, and severs a major vessel. He dies in the emergency department (ED) at Preshy before his father can get there.

Not as a doctor, but simply as another human being, David Thomson, a resident in his first month of training, must now confront a parent’s anguish and pain.

“You send your child out to ride a bicycle—” Thomson thinks aloud, looking back. The sentence is left hanging. “I’ll never forget. We don’t know these people. They come in, and we don’t know the patient, we don’t know the family, and we have to tell someone their loved one has died. . . . That’s the toughest part about what we do in emergency medicine.”

David Thomson (Res ’90) is associate professor of EM and director of transport medicine for SUNY Upstate Medical University in Syracuse, New York. He is also medical director of Telemedicine, a remote audio/visual medical service.

Near Carnegie Mellon University, a 13-year-old boy is riding his bike. Blazing downhill, he loses control, smashes into a tree, and severs a major vessel. He dies in the emergency department (ED) at Preshy before his father can get there.

Not as a doctor, but simply as another human being, David Thomson, a resident in his first month of training, must now confront a parent’s anguish and pain.

“You send your child out to ride a bicycle—” Thomson thinks aloud, looking back. The sentence is left hanging. “I’ll never forget. We don’t know these people. They come in, and we don’t know the patient, we don’t know the family, and we have to tell someone their loved one has died. . . . That’s the toughest part about what we do in emergency medicine.”

David Thomson (Res ’90) is associate professor of EM and director of transport medicine for SUNY Upstate Medical University in Syracuse, New York. He is also medical director of Telemedicine, a remote audio/visual medical service.

Did you hear it? the nurse asked me.

“Hear what?”

“Did you hear the screams? Did you hear the ghosts? We’ve all heard it.

“And I said, Yes, I did.

“I had a feeling that I could hear the screams—cries—” Sandra Schneider pauses as she recalls, “of the patients I cared for.” The new ED at Rochester had just opened. Schneider and the rest of the staff decided to take, one by one, a final tour of the old ED. It was the first and last time they would see the rooms empty, the only time they would ever walk through alone. In each room, Schneider had the same “very weird, very odd” sensation and heard the same unsettling echoes.

Sandra Schneider (Res ’78, MD ’75) is chair of EM at the University of Rochester School of Medicine and chief of the ED at Rochester’s Strong Memorial Hospital, in New York.
Bone, nerve, cartilage... all made from scratch from stem cells found where no one thought to look, in muscle.

**SHOWN HERE:** Pitt's Johnny Huard regenerated muscle fibers (red) in tissue from an animal that models Duchenne muscular dystrophy.
THE DREAM OF REGENERATIVE MEDICINE

BY ROBERT MENDELSON

MUSCLE BOUND

Everyone seemed to be having a genuinely good time. Spirited conversations, punctuated with laughs and exclamations, reverberated from dinner table to dinner table. Those festive sounds continued unabated while the food servers nimbly removed empty plates and wineglasses to make room for the cappuccino mousse. No wonder the $250-a-plate dinner at the Pittsburgh Hilton and Towers Grand Ballroom had been dubbed a “gala” by UPMC Health System, the event’s sponsor.

The aura was more like a wedding reception than the finale of a three-day conference. But that atmosphere changed in a heartbeat when the keynote speaker took the stage.

E

It was not a grand entrance, but it was as dramatic as anything Hollywood could concoct. A solitary figure was wheeled to center stage from behind a black curtain. After the ovation died down, the only sounds in the room were shutters clicking from journalists’ cameras. Even the efficient Hilton staff members stopped in their tracks to catch a glimpse of the man who—despite a traumatic equestrian accident in 1995—is best known as Superman.

Christoper Reeve
With neither notes nor a teleprompter, Christopher Reeve addressed the audience. Among the 520 guests in the ballroom were local and state politicians, business and health care executives, and—of particular interest to Reeve—scientists from all over the world. They had congregated in Pittsburgh for the inaugural Engineering Tissue Growth International Conference and Exposition to get up to speed on the latest developments in tissue engineering.

Reeve spoke in a raspy voice as apprehension permeated the ballroom. He told a joke about how tissue engineers were to be lauded for their ability to have one Kleenex follow another out of a box. His levity produced some chuckles, but his mid-sentence pauses, which he had to take in order to breathe from a tube, were a constant reminder that this man’s incapacitation is devastating.

In a moment of introspection, he revealed what it’s like to be Christopher Reeve: “When you sit here in a wheelchair, frankly, depending on other people for almost everything, unless you just roll over and give up, a lot of your waking time given on Earth is the thinking about How do I get out of here? How do I do it? How can we do it?”

During the next 30 minutes, Reeve, a man who has found it increasingly difficult to turn his attention toward things superficial, spoke about politics, about religion, about morality, and about what society values. He also spoke about his unwavering belief that someday he will walk again.

It could happen—that was the informal consensus of the scientists from 24 countries who participated in the March conference. “I believe that the reversing of neuronal damage is within our sight certainly,” says Alan Russell, who is the executive director of Pittsburgh Tissue Engineering Initiative, which cosponsored the conference, “15, 10, even five years ago I wouldn’t have said that.”

Though it is his organization’s mission to get people thinking of Pittsburgh as an international center of excellence in tissue engineering research and education, Russell’s optimism isn’t rooted in a regional rah-rah attitude. Rather, Russell, a chemistry PhD, bases his assessment on what may be a fountain of youth that exists in the body of every human being: stem cells. It’s becoming evident to him that these immature cells can be coaxed, when in the appropriate environment, into creating tissue—nerves, muscles, bones, and the like. The long-term vision held by Russell and others in the tissue engineering community sounds like an Isaac Asimov story: new hearts, new lungs, new livers, new kidneys, new knees. All from scratch.

Today, there are some tissue engineering products available for clinical use that don’t rely on stem cells—most notably artificial skin and cartilage—but now the futures of tissue engineering and stem cells appear to be intertwined.

“Actually believe the better term for both of those areas is just regenerative medicine,” says Russell, who is also a professor and chair of the Department of Chemical and Petroleum Engineering at the University of Pittsburgh.

Reeve probably doesn’t care what it’s called—tissue engineering, regenerative medicine, a miracle. He wants a new spinal cord. He wants an elderly woman who falls and breaks her hip to get a new hip. Not a replacement.
hip, but a new human hip made by stem cells. The work of Johnny Huard, a 34-year-old Quebecois who was among those sitting in the Hilton ballroom, is feeding such dreams. Huard and his team at the School of Medicine believe they have discovered stem cells where no one really thought to look—in muscle. And it looks like when they place the cells in the appropriate environment, they will regenerate practically any kind of tissue.

“\textit{When you sit here in a wheelchair, frankly, depending on other people for almost everything, unless you just roll over and give up, a lot of your waking time given on Earth is the thinking about \textit{How do I get out of here? How do I do it? How can we do it?}}”

Jay Vacanti, professor of surgery at Harvard Medical School and director of the pediatric transplantation program at Massachusetts General Hospital in Boston, says Huard is “teaching the rest of the world about tissue engineering.”

“It’s funny,” says Huard, who is an assistant professor of orthopaedic surgery and director here of the Center for Cell Therapeutics. “We were not looking for stem cells in the first place.”

His research revolved around Duchenne muscular dystrophy (DMD), which affects one in 3,500 boys. DMD is the result of a genetic defect that causes muscle loss, owing to the absence of dystrophin, a protein essential for muscle function. Typically, by the age of five, a boy with DMD will have trouble walking; in another five years, he will be wheelchair bound; and by the age of 20, he will die because his heart no longer has enough muscle to pump blood.

Some DMD gene therapies are making promising preclinical strides, including investigations under way at Pitt. Yet because these boys experience early and total muscle atrophy, Huard is convinced gene therapy won’t work alone.

“If you use gene therapy to deliver the gene [that produces dystrophin] to muscle, but you don’t have any muscle, it will not work.”

Huard explains in his French-Canadian accent, “This is why I base a lot of my research in cell therapy, because I always believe you have to rebuild the muscle somehow.”

However, cell treatments in the early 1990s on DMD patients were disappointing. Researchers injected eight billion muscle cells into a patient’s biceps to rebuild muscle, and nearly 95 percent of those cells died within 48 hours. So in 1996, when Huard started his laboratory in Pittsburgh with three technicians, he had a specific goal in mind:

“I said, ‘If we find out a way to improve cell survival, we are going to be great.’”

He went in search of cells with a longer life span. For two years, he took muscle cells derived from mice and put them in collagen-lined flasks to find out if any of the cells behaved differently. Sure enough, some did. After a few hours, he found some cells coating the flask; he called them EP—for “early platers.” But there were others, he called LP (late platers), which seemed to take a while before he found them clinging to the flask wall. Huard continued the same experiment but expanded the time frame, first from six-to-eight hours to overnight, then from a day to six days. No matter the time, he always found LP cells floating around.

Huard knew he was on to something, especially because the LP cells looked different than the EP cells; they were round instead of worm shaped. After conducting experiments in rodent models, he realized it was probably the EP cells that died when injected into a patient’s biceps. He wasn’t sure why the LP cells weren’t being attacked by the body, why they had this immune privilege, but he had a hunch.

For two years, he compared LP-muscle-cell properties to those of known stem cells. Stem cells don’t yet have the genetic configuration to be recognized as “nonself” by the body, so they don’t tend to set off the body’s immune defense. It turned out the LP and stem cell properties were the same. He had discovered a stem cell in muscle.

Now Huard is learning how to take the stem cells he has found—long before they’ve differentiated and are on their way to becoming muscle—and mold them. The plan: Put them in a bone environment, and watch them become bone. Put them in a nerve environ-
already seen rodents make new bone, muscle, and cartilage successfully. Huard’s work could help medical science jump many of the hurdles to using stem cells. Researchers at first looked to embryos for stem-cell harvests, a hotly debated proposal. Huard’s findings mean that clinicians may be able to secure ready loads of therapeutic stem cells by tapping into a biceps or a hamstring. Are Huard’s stem cells fundamentally different from those found in embryos, which are considered “totipotent,” able to transform into any cell type? It’s not clear. It seems logical that any immature cells found in tissue such as muscle would have already “decided” what they want to be—at least narrowed it
down to a few kinds of tissue. Yet that may not always be the case.

It’s possible that other areas of the body may harbor plentiful supplies of stem cells, too. A Pitt/University of California at Los Angeles team appears to have found stem cells in fat, though they haven’t yet shown those cells are able to regenerate tissue in living organisms.

Huard’s drive became evident early on, when he was growing up in the village of Gascou, which he describes as a 10-hour drive north of Quebec City.

“Johnny’s mother told me that he was the first to wait for the school bus, always, always, always,” says his wife, Marcella Huard.

“After school, without anyone asking, he would do his homework right away; then, bottom line is—I can work with rat, mouse, rabbit, for the rest of my life; I can publish many papers, write books like we’re doing; but I will never know what’s going on in humans [without studying human biology].” So he has formed a host of collaborations.

Michael Chancellor, a professor in the Department of Urology, hopes Huard’s stem cells will regenerate lost muscle in defective sphincters and restore urinary function. Bartley Griffith, vice chair of surgery at the University in addition to director of the McGowan Center for Artificial Organ Development, envisions the cells restoring heart muscle destroyed by myocardial infarction. Freddie Fu, chair of orthopaedic surgery, anticipates that they may one day offer an alternative to artificial knee and hip replacements. Each of these clinicians expects human trials to begin within the next five years.

“As somebody who could be a recipient of such a difference, I tell you, I can’t wait.”

he’d go play hockey.” In his khakis, white turtleneck, and silver bracelet, the athletic-looking PhD might be mistaken for a professional hockey player. Yes, he is a fan of Mario Lemieux.

And it’s Johnny, not Jonathan, not John.

His wife, who works in his lab as a technician, explains why. “Johnny’s grandfather died before Johnny was born. He said to his daughter-in-law, ‘Call your baby Johnny if he is a boy. You will never regret it.’” She had a girl, so the request went unfulfilled until her next pregnancy when she gave birth to Johnny Huard (pronounced You-are in Canada and Hew-ard in the United States).

The father of two boys still plays hockey—although now it’s on his neighborhood street in Westford, Pennsylvania, with his 10-year-old. (His other child is still in diapers.) He also still is compelled to understand fully whatever draws his attention. He’ll put in six days a week on his studies, often 12-hour workdays. He talks with pride about his accomplishments to date, yet they do not leave him content. There’s more at stake than laboratory victories and his seven active grants that will generate $1 million annually for the next five years.

“I will tell you something,” he says.

“I have a lab of 25 people. We are publishing a lot. I like what I do, but I think the

FAT CHANCE

When the April issue of Tissue Engineering came out with an article suggesting that fat harbors stem cells, the news traveled fast. Stories appeared in the New York Times, Washington Post, and elsewhere worldwide. Coauthor Adam Katz (Res ’01) was amazed. “I guess,” he speculates, “if you put the words ‘stem cell’ and ‘fat’ together, it’s bound to sell papers.”

The hype may be premature, yet Katz is optimistic about the possibilities. Like Pitt’s Johnny Huard, who discovered muscle-derived stem cells, Katz wasn’t looking for stem cells. In 1996, as a Pitt plastic surgery resident on sabbatical, he went into the lab to learn why fat never sustains its mass when transplanted.

“If you put in a volume of fat the size of an apple, within months it will shrink down to the size of a golf ball.” He also was intrigued by the similar appearance between bone marrow stem cells and fat cells. After a while, he thought, Well, bone marrow is just fat, the fatty space in the bone. “From there,” says Katz, “things kind of clicked.” Stem cell research became a priority. In 1998, Marc Hedrick (Fel ’98), the article’s lead author, who was then a fellow in plastic surgery, joined him in the lab. After his Pitt fellowship, Hedrick continued the work in California while Katz completed his residency. Their article details the creation in a culture dish of muscle, bone, and cartilage from fat cells. “It’s not a completely pure collection of cells,” notes Katz, “so the next task is to figure out in that mixed population which cells are actually the stem cells. After that, we need to put those cells in animal models and confirm, in a living system, what we have seen. Then, the testing goes up the animal chain.” —RM
Conversations at home with Georgia Duker and James Johnston are likely to turn to the subject of how to capture someone's imagination. Each professor has been honored with teaching award after teaching award. (Shown here with protégés Christina, 13, Alex, 16, and Nishi, 7-year-old tabby.)
The resident was in a hurry when he wrote the prescription. Without thinking, he checked “refills” on the order. Two months later, his patient came back. She had problems with bone marrow suppression. Once the resident looked at the prescription he had written, he knew the cause of her problem. He said to her, I messed up. You should have only had this for two weeks. You had it for eight weeks. This was the wrong thing for you to have had for that long. The patient looked at him. I know you’ll do your best to make it better, she said.

It is a story James Johnston, professor of medicine at the University of Pittsburgh School of Medicine and winner of the 2000 Chancellor’s Distinguished Teaching Award, shares with his students. It is the story of a mistake he made while treating a patient when he was a newly minted MD. “The students get the idea that a role model never has made any mistakes or that it’s never, ever talked about,” he says. “I really dislike it when people get larger than life.

“One of the things I teach is that someone’s clinically mature when they can look a patient dead in the eye and say, I don’t know. And the next part of that
should be, I'll find out if I can. And the next part is to be honest and say, I made a mistake.

"The students store it away," he says. "Two years later, they'll come up to me and they'll say, You know you told me that story about giving the medication for too long. I always remember: Every time I do a prescription, I try very hard to make sure it's written the right way."

Johnston tells students stories about himself both in and out of the classroom. Usually, they are about things that matter deeply to him—like his patients or his wife, Georgia Duker. Like Johnston, Duker, an assistant professor of cell biology and physiology, has won the Chancellor's Distinguished Teaching Award as well as a slew of other teaching honors. And like Johnston, she is a School of Medicine alum—he received his MD from Pitt in '79, she her PhD in '82. Duker is the other half of this marriage between teachers, whom many students know as Jamie and Gigi. (The couple is eager to point out that other marriages have produced award-winning Pitt teaching duos, namely Susan Dunmire, MD '85, and Samuel Fisherman, MD '85, as well as physician-instructors Harsha and Kanchan Rao.)

Johnston's stories are heard in various Pitt venues. One Saturday night in 1997, his wife was about to become the first faculty member ever to perform in the annual medical school talent show. (This was something she had decided to do after a student noted that it would be nice if faculty would participate—Duker being someone who likes to be responsive to student requests.) Soon, she

"Many, many students are just so exceptional, it takes your breath away," says Johnston.

would play her guitar and sing "Bones," a Sesame Street song with the line: Without bones you'd all fall down, just like puddles on the ground. But before Duker made her appearance, Johnston walked onto the stage to introduce her.

I thought I'd tell you how I met Dr. Duker, he said, taking the audience back to a summer day at Penn State in 1973.

I was sitting on the mall, which is this gorgeous area of tall elm trees. This tall, lanky woman on a bicycle with a knapsack full of flowers and a guitar came up. All I could think of was, "Would you look at this hippie dippy chick?"

In the fall, they met again, when they both took comparative anatomy, but then Duker graduated in December. She went off to Vermont where she was a waitress, actually she was a ski bum, for about three or four months, and then she went on to hitchhike through Europe for about six months.

In the fall, Duker returned to Penn State to start graduate school. I chased this poor woman around the Pattee Library while I was really supposed to be reading 600 pages of histology. That led to a first date, and three months after that, I proposed to her.

An "Awwwww" erupted from the audience of mostly medical students.

It gives me great pleasure to introduce my wife, Dr. Georgia Duker.

For Johnston, telling such stories is an important part of his teaching strategy. He deliberately reveals himself to his students.

"Students should know that teachers are also people. They have people interests. It takes the mystique out of teachers and makes them a bit more approachable," says Johnston.

Most medical students first encounter Johnston, a nephrologist, during their renal course. It's October of their second year. As he begins talking about kidney anatomy, he walks around the room, using a lapel mike with a long cord. I may trip over the cord, he warns. (He has never tripped, nor does he expect to, but the anticipation of a misstep, along with his physical motion, draws all eyes to him.)

After a 10-minute anatomy overview, it’s time to shift the focus of his talk. He shows a slide. It’s a picture of Johnston as a teenage, wearing a navy blue blazer, with short dark hair, black horn rim glasses, a bland expression. Here I am when I was a member of the Young Republicans of America, he is joking.

Then, he shows another slide. It’s him again, smiling this time, wearing aviator glasses, a canary yellow shirt, a blue jacket. His bushy hair is full of red highlights from the sun. This is a picture of me from college, the picture that I sent with my medical school application.

The class howls with laughter.

Change occurs in nature, he says. But, even so, blood flow to the kidney is kept constant.

The next slide is three lines of text: Renal autoregulation of the kidney under a variety of blood pressures and flows maintains constant blood flow to the kidney.

Other colorful slides creep in—maybe Captain Kirk and Mr. Spock or something from Johnston’s Prince Valiant comic collection—
Six years ago, a Pitt med student came up to Duker during a review session for the second-year reproduction course. Duker was not an instructor for the course yet, but had volunteered to be there because she thought it might help the students. What is the normal uterus like, and how does it change during pregnancy? the student asked. She was having particular trouble understanding the placenta. So Duker spent two hours going over the material with her. Two years later, the student stopped by Duker’s office to talk about a frustration she felt that was shared by others in her ethnic group. Often, he told her, faculty members didn’t learn their names; probably they just didn’t try hard enough. She said, All of a sudden, the placenta made perfect sense.

Sometimes students might need to hear the material organized a little differently than how they heard it in lecture, Duker says. She’s happy to spend a couple of hours in her office to help someone understand a concept or an organ system if needed. Sometimes though, a two-minute clarification in the stairwell seems to do the trick. And in those cases when struggling students aren’t applying themselves fully, Duker is willing to spend extra time with them as well. First though, she will let them know, gently but firmly, it’s time to get serious about the class—to live up to their end of the bargain. One of those students once told her: You’re one reason why I made it out the other end of medical school. A holiday card from him, sent to Duker years after graduating, now sits on a shelf in her office.

Duker, who has a PhD in cell biology and human anatomy, teaches in about 10 different med school courses, and it isn’t unusual for her to sit in on a colleague’s class (to help make sure her lecture plan is on target, her material is current, and her terminology is consistent with that being used by other professors). So fresh-out one professor among the 200-plus who have taught them to receive their highest honor, the Golden Apple Award for Pre-Clinical Teaching. Johnston has been a finalist for the award numerous times and won in 1998.

“Many, many students are just so exceptional, it takes your breath away,” says Johnston. “To think that you actually made a difference to them. To be honored by those classes in that way to me is very, very special.”

To be honored by those classes in that way is very, very special.”

They are extraordinarily intelligent and motivated,” says Duker. “They are

As he begins talking about kidney anatomy, he walks around the room, using a lapel mike with a long cord. I may trip over the cord, he warns.

A MENTOR’S MENTOR

James Johnston tries to teach by example; that’s how he learned best. He might offer students this advice: Find someone who has similar interests, and project yourself onto his or her career.

Johnston, who won the Chancellor’s Distinguished Teaching Award this year, remembers a day in his third year of medical school at the University of Pittsburgh. He and his classmates were supposed to perform a physical diagnosis at Children’s Hospital, yet they’d been left in a room with no patients and no preceptor. Then Johnston saw, in the hallway, Paul Gaffney, MD ’42—the doc who’d cared for his younger brother. He explained the situation to Gaffney and asked for help.

No problem, Gaffney said. The professor dropped what he was doing, found four patients, and returned later to “precept” the students.

I want to be a doctor like that, decided Johnston.

Paul Gaffney died May 14, 1999. The Paul C. Gaffney Endowed Chair in Pediatric Hematology/Oncology was established in his memory. —EH

I want to be a doctor like that, decided Johnston.

Paul Gaffney died May 14, 1999. The Paul C. Gaffney Endowed Chair in Pediatric Hematology/Oncology was established in his memory. —EH

I want to be a doctor like that, decided Johnston.

Paul Gaffney died May 14, 1999. The Paul C. Gaffney Endowed Chair in Pediatric Hematology/Oncology was established in his memory. —EH
striving forward at such a rapid pace that many times they haven't given themselves the moment it may take to get a basic orientation." Duker sees herself refocusing students in their enthusiastic rush to learn about disease, so she was shocked when she won the Golden Apple in 1995.

"It never, ever even occurred to me that the students would consider me for something like that. Never," she says. "The students are so clinically focused when they come in. They want to be doctors. They want to treat disease."

When the two professors go home, it's to a two-story house on a quiet Monroeville street. Quilts Duker has made decorate the walls. Framed in their bedroom is a program from the Prague Symphony Orchestra concert they attended on their first date: January 17, 1975. Evenings might find Duker taking her son Alex, 16, to swim practice or Christina, 13, to dance class. (The eldest daughter, Kathryn, 21, is away at college.) Johnston often comes home late from the clinic, then reads a little military history or science fiction before he goes to bed.

On a given night, Johnston might first head to the kitchen. He'll get out the baking stone Duker gave him. Depending on what's in the refrigerator and the cupboard, he'll make, from scratch, French bread, onion-dill bread, or maybe cranberry-walnut bread. He'll wrap two loaves in blue and white towels. The next day, he'll place them on the classroom table for his small discussion group. On another night, Duker might go to the kitchen to prepare for her small group. She might bake bread or fix fresh strawberries and cantaloupe. "I think medical students are all malnourished," she says, joking.

Then there are the nights before a new class starts. Johnston and Duker might look at each other's roster of students for a small group. That student will help move your discussions along, one of them might say. Don't let that one get too quiet. Here also is the chance to get an expert opinion—from someone who has racked up the teaching awards—before giving a new lecture. "We give each other our lectures and say, Did this slide make sense? Did you understand that? I thought I saw your eyes going closed there. What are the toothpicks for?" says Johnston.

When the two professors talk about a student, it might be someone they're concerned about, who is struggling academically. "The thing that breaks my heart the most is when there's someone who needs help and you go after them, and they won't accept it," says Johnston. "There are some people you can't reach. You have to be accepting of that." But those cases are rare. "The thing I enjoy the most is when someone grasps the concept," says Johnston. "You've finally gotten through using a silly example, or going through the 14th analogy, and then all of a sudden, you see the light bulb go off. There's nothing like that, because all of a sudden they've got something they didn't have before. It's an epiphany for the student, and you get to bask in the glow, and it's such a great feeling. It really is."

Students often want to learn about disease states before they have a handle on normal physiology, says Duker.

HIGH STANDARDS
The onslaught of immune cells was as effective as the English at Agincourt. If she hoped to gain the full meaning of Christopher Widnell's example in cell biology class, Georgia Duker was likely to find herself becoming reacquainted with the story of Henry V's victory over the French forces. She didn't mind. Figuring out what a lightly equipped army of archers overtaking the French armored calvary had to do with immunology—or any of the other puzzles put forward by Widnell, her professor and PhD advisor in the '70s and '80s—made learning that much more rewarding. Little was dry or commonplace in Widnell's world.

"He tried to pull us up to his level," notes Duker, who is now an assistant professor in that same department at the School of Medicine. "There is a fine line of constantly teaching above without alienating. That was a quality he definitely had." Some of Widnell's magic must have rubbed off: Duker's own students have recognized her with a number of teaching honors.

After teaching at Pitt for 29 years, Christopher Widnell is a professor emeritus and scientific program director of the American Cancer Society. —EH & EL
MATCH RESULTS
CLASS OF 2001

ANESTHESIOLOGY
Arens, Mars
Brooks, Heather
Shank, Sarah
UPMC Health System, PA

EMERGENCY MEDICINE
Hovell, Heather
Lichtenberg, Kristin
Ott, Benjamin
UPMC Health System, PA

INTERNAL MEDICINE
Brooks, Karen
Bonner, Brian
King, Richard
UPMC Health System, PA

OBSTETRICS/GYNECOLOGY
Fitzsimmons, Edward
Barnes, Elizabeth
UPMC Health System, PA

INTERNAL MEDICINE — PEDIATRICS
Bowen, Sarah
Leveille, Jonathan
UPMC Health System, PA

INTERNAL MEDICINE — PRIMARY
Anand, Niraj
Peters, Beth
UPMC Health System, PA

MAXILLOFACIAL SURGERY
Barnes, Elizabeth
UPMC Health System, PA

OBSTETRICS/GYNECOLOGY
Fitzsimmons, Edward
Barnes, Elizabeth
UPMC Health System, PA

INTERNAL MEDICINE
Brooks, Heather
University of Chicago School of Medicine, CO

OBSTETRICS/GYNECOLOGY
Fitzsimmons, Edward
UPMC Health System, PA

NEUROLOGY
Bohmer, Adam
University of Washington School of Medicine, WA

PHYSICAL MEDICINE REDIHABILITATION MEDICINE
Boscak, Angela
UPMC Health System, PA

PLASTIC SURGERY
Boscak, Angela
UPMC Health System, PA

PSYCHIATRY
Boscak, Angela
UPMC Health System, PA

RADIOLOGY DIAGNOSTIC
Boscak, Angela
UPMC Health System, PA

REHABILITATION MEDICINE
Boscak, Angela
UPMC Health System/WPIC, PA

SURGERY
Boscak, Angela
UPMC Health System, PA

SURGERY — PRELIMINARY
Boscak, Angela
UPMC Health System, PA

TRANSTITIONAL
Boscak, Angela
Temple University Hospital, PA
Physicians Wanted: The Republic of India seeks general practitioners and specialists to serve an estimated 800 million people who live in the country’s rural areas, most of whom currently receive inadequate medical care. Expertise with antiquated medical equipment and limited water supplies is preferred but not required. Numerous locations are available that include little in the way of adequate housing, schools, or recreation. For more information...

What are the chances that ad would generate many inquiries? Seated behind his office desk at UPMC Presbyterian, P. S. Reddy (Fel ’71, Res ’68) answers by way of a sad smile.

Such a setting didn’t hasten his return to his birth country. Reddy is a cardiologist and professor of medicine at the School of Medicine. He has lived in Pittsburgh since 1967; that was after residencies and fellowships in Scotland and England. “I went,” he says, “where I felt I would receive the best training, but I always planned to return to India.”
Now at the age of 63, when he could be thinking about retirement, Reddy thinks instead about how to improve the health of millions of rural Indians. Although the distinguished looking professor won’t come out and say it, the seeds of what has become a full-time mission may have been planted long before his hair turned gray, back when he was a 12-year-old who filled his days with studying and dissecting tree branches that he could carve into field-hockey sticks.

He, his six siblings, and the neighborhood kids always seemed to be playing on the streets of Warangal, a small city in the state of Andhra Pradesh. While the energetic brood frolicked, Reddy’s dad eked out a living as the proprietor of the equivalent of a five-and-dime store. That largely uneventful childhood changed the day Reddy’s father experienced severe chest pains.

There were no cardiologists or well-equipped medical facilities nearby, only what amounted to an infirmary. “They didn’t even have an electrocardiogram,” says Reddy. “They just treated him with bed rest.” His father survived, but Reddy speculates that if his dad had received the kind of treatment then available in the United States, damage to his heart might have been minimized. Perhaps he wouldn’t have eventually died from a heart attack, just as his son entered Gandhi Medical College.

There were no cardiologists or well-equipped medical facilities nearby, only what amounted to an infirmary. “They didn’t even have an electrocardiogram,” says Reddy. “They just treated him with bed rest.” His father survived, but Reddy speculates that if his dad had received the kind of treatment then available in the United States, damage to his heart might have been minimized. Perhaps he wouldn’t have eventually died from a heart attack, just as his son entered Gandhi Medical College.

Although Reddy says he didn’t choose cardiology to honor his father’s memory, he does not rule out subconscious motivations. However, he would rather get back to pressing business at hand—that is, helping hundreds of millions of rural Indians gain access to good health care. He has a solution, and it has begun to take shape. With the diligence a cardiologist might use in methodically outlining a proposed therapy to the Food and Drug Administration, he details the procedure to those willing to listen: family, friends, colleagues, government officials, administrators, journalists, strangers. A scrapbook of newspaper clippings, a foundation that has amassed nearly $4 million, and a stash of international humanitarian awards demonstrate that Reddy’s soft-spoken monologue works. His plan:

- First, create medical centers in metropolitan areas on a par with what’s offered in the United States. Then, to entice Indian doctors and their families to these areas, establish quality housing, schools, and recreational facilities nearby—Reddy calls these, at the behest of his publicist, “MediCities.”

Medical personnel residing in these very livable MediCities would commute to satellite clinics in rural areas daily.

Since 1981, Reddy has been putting this plan into action. He helped found Science, Health, Allied Research & Education (SHARE), which in 1993 opened a hospital in Hyderabad, a city of five million in south central India about 100 miles from Warangal. The hospital and apartments for the medical staff signal the beginning of the first MediCity. Someday, it will consist of a research facility, housing, a senior citizens’ center, and a health resort.

Through a project called REACH (Rural, Effective, Affordable Comprehensive Healthcare), Hyderabad MediCity has already created four satellite clinics and adopted 35 nearby rural villages with a cumulative population of 40,000. Today, birth and death rates, maternal mortality, and low birth weight stats in that region approach those of the United States. Also, population growth has declined to 1 percent, nearly half the national average. REACH’s annual cost: $2.50 per citizen. Reddy hopes to witness his MediCity model implemented throughout India and other developing countries. To sustain the momentum, the Pittsburgh resident spends more than half his days, often months at a time, at the prototype MediCity in Hyderabad.

His wife, Pushpa Reddy—who like her husband was born in India and is a Gandhi Medical College alum—has learned to accept the prolonged absences. “Sometimes,” the radiation oncologist says, joking, “I need the peace and quiet. When he’s here it’s like a tornado is coming through: the telephone’s ringing, the fax is going, and I keep hearing him tell everyone the same story over and over again.” After a pause, she makes sure to add, “It’s a story worth telling.”

**Today, birth and death rates, maternal mortality, and low birth weight stats in that region approach those of the United States.**

Pitt Professor P. S. Reddy figured out a way to get health care to 40,000 rural Indians. That’s just for starters.
Anybody home?” Patrick Perri, MD ’01, calls out. “Operation Safety Net. Socks and sandwiches.” Perri leans over a sleeping figure wrapped in blankets and tucked against a wall in one of Pittsburgh’s downtown alleys.

“Anybody home?”

Slowly, a head emerges from the layers of blankets, and a man in a blue jacket sits up. Though it’s only a few hours after dark, the air on this early spring night already is brisk. The man rubs his hand across his face and mumbles a sleepy hello.

“How are you feeling?” Perri asks, recognizing the man now and calling him by name. “Do you need anything tonight?”

As a medical student at the University of Pittsburgh (where his father, John Perri, MD ’59, also studied) Perri has logged more than 750 hours volunteering for Operation Safety Net. He is part of a team that walks the streets every Wednesday providing care and what comfort they can to Pittsburgh’s homeless.

The sock handouts, by the way, are welcome boosts to those living on the street. If you were to talk to homeless people about their health concerns, as Perri has innumerable times, they’re likely to emphasize foot care—it’s an even bigger priority than conditions like hypertension or diabetes.

Tonight on “street rounds” Perri accompanies Jim Withers, an internist at Mercy Hospital of Pittsburgh and the program’s founder.

Sturdily built, Perri has full features, and even with a five o’clock shadow, his 26-year-old face is boyish. A couple of first-year medical students walk alongside Perri (about 100 students get the chance each year to spend a night on rounds with Operation Safety Net). He asks them to think about the dangers of administering acetaminophen to patients who may be abusing alcohol. Perri carries a flashlight in one hand, and as he talks, his thumb flicks the beam off and on.

“Something so simple as ‘I got some back pain, Doc,’” Perri says, “out here it’s very different.” Flick, flick.

At one point, Perri and Withers stop to listen to a man who is frustrated because he has so many bags and blankets he can’t carry them by himself, leaving him stranded on the same spot of sidewalk all day. The man doesn’t need medical attention, yet Perri and Withers stop, gently nodding their heads, keeping time to the man’s words.

Later, at a memorial beneath the Fort Pitt Bridge, where the Monongahela River cuts a wide swath through Pittsburgh’s hills, Perri reaches his hand toward a series of small bronze plates affixed to a cement wall. Each plaque commemorates someone who has died on the street, many of whom Perri knew.

Moving from one name to another, Perri tells each story, his voice at first light, then weighted as he reaches the ending:

“Heart attack, probably crack related.”

For Perri, knowing the stories that make up a life is as important as knowing when to prescribe an antibiotic. The smallest details reveal much. For instance, that man moored to the sidewalk with all those bags and blankets—he’s probably newly homeless.

But Perri is also a scientist; his narratives are infused with statistics. “Studies show that the homeless are no more likely than their peers to commit violent acts,” Perri says, walking away from the memorial, “but they are much more likely to be the victims of violence.”

When he started volunteering, that was as an undergraduate at the University of Notre Dame in Indiana, Perri was looking to spend time doing something uplifting—“happy feel-good charity” is what he had in mind. He soon discovered that the work he would come to love made him deeply uncomfortable.

Years later, he still finds it unsettling.

“I never just feel good about this, feel good about myself,” he says.

It’s after 11 p.m. when Perri sits down next to a man smoking a cigarette beside the river. The rest of the team hangs back, giving the two room. The lights at PNC Park across the water are like dark blue stars against the sky. Perri asks the man if he has been watching as they test the giant TV screen in the stadium’s new scoreboard.

“That man,” Perri will say later, “is a brilliant survivalist, a minimalist. A thin blanket and a sheet of plastic, that’s all he ever has. No matter how cold it gets.”

For Perri, knowing the stories that make up a life is as important as knowing when to prescribe an antibiotic. The smallest details reveal much. For instance, that man moored to the sidewalk with all those bags and blankets—he’s probably newly homeless.

But Perri is also a scientist; his narratives are infused with statistics. “Studies show that the homeless are no more likely than their peers to commit violent acts,” Perri says, walking away from the memorial, “but they are much more likely to be the victims of violence.”

When he started volunteering, that was as an undergraduate at the University of Notre Dame in Indiana, Perri was looking to spend time doing something uplifting—“happy feel-good charity” is what he had in mind. He soon discovered that the work he would come to love made him deeply uncomfortable.

Years later, he still finds it unsettling.

“I never just feel good about this, feel good about myself,” he says.

It’s after 11 p.m. when Perri sits down next to a man smoking a cigarette beside the river. The rest of the team hangs back, giving the two room. The lights at PNC Park across the water are like dark blue stars against the sky. Perri asks the man if he has been watching as they test the giant TV screen in the stadium’s new scoreboard.

“That man,” Perri will say later, “is a brilliant survivalist, a minimalist. A thin blanket and a sheet of plastic, that’s all he ever has. No matter how cold it gets.”
'50s Robert A. Lewine, MD ’53, accepted a research associate position with Hill Top Research in Scottsdale, Arizona, which conducts clinical research and offers in vitro toxicology and microbiology services. Before moving west, Lewine was president of the medical and dental staff and chief of pediatrics for Wheeling Hospital and Ohio Valley Medical Center in Wheeling, West Virginia, and a visiting clinical professor of pediatrics for Wheeling Hospital and Ohio Valley Medical Center. Lewine returned to the United States and was president of the medical staff of the Strong Heart Study, exploring cardiovascular disease among Native Americans.

'60s Edith Roberts Welty, MD ’68, has devoted numerous years to working with her husband, Thomas Koester Welty, MD ’69, on reservations in the southwestern United States. Roberts Welty wrote the chapter “American Indian and Alaska Native Women” in Lila A. Wallis’s Textbook of Women’s Health and is active in the Global AIDS Alliance and other projects targeting AIDS in Africa. The Weltsys plan to move to Nampa, Idaho, where Roberts Welty will help staff a low-income health clinic with her physician daughter.

'Thomas Koester Welty, MD ’69, fights AIDS alongside his wife, Edith Roberts Welty, MD ’68. He frequently travels to Cameroon, to help classmate Obed Nana, MD ’69, treat AIDS patients. Welty has published papers for the Strong Heart Study, exploring cardiovascular disease among Native Americans.

'70s Harry Rubash, MD ’79 (Orthopaedic Surgery Fellow ’81, Orthopaedic Surgery Resident ’84), has received the Ranawat Award from the American Academy of Orthopaedic Surgery. Rubash is chief of orthopaedic surgery at Massachusetts General Hospital. He researches the biomechanics and failure mechanisms of total joint arthroplasty (TJA) in the hip and knee.

'80s Dante Landucci, MD ’82, is with the pulmonary staff of the East Carolina University (ECU) Brody School of Medicine in Greenville, North Carolina. Landucci worked for the National Health Service Corps for five years after his residency, four of which were spent inside federal prisons. Before accepting his position with ECU, Landucci completed a fellowship at the National Institutes of Health, where he was trained in critical care medicine and pulmonary disease. (LanducciD@mail.ecu.edu)

'RESIDENTS AND FELLOWS

Nancy Snyderman (Otolaryngology Resident ’83) has been a medical correspondent for ABCNEWS’s Good Morning America since 1987. She also reports for 20/20 and writes a monthly column for Good Housekeeping. Snyderman has been honored by the Associated Press and other media organizations.

'90s Donald T. Freeman, MD ’93, is an assistant clinical professor for the University of California, Los Angeles’s Neuropsychiatric Institute and Hospital, where he teaches group dynamics. His specialties include long-term psychodynamic psychotherapy and psychopharmacology in patients with medical conditions, especially those with HIV. (dfreeman@ucla.edu)

Anlin Xu, MD ’97, has been awarded the first Clinical Fellowship in Allergy and Immunology Award by the American Academy of Allergy, Asthma and Immunology; she’ll train at the University of California at San Francisco. Xu’s research will explore immunologic therapies for asthma and allergic rhinitis.

Matvey B. Palchuk, MD ’98, will continue his training as a fellow in medical informatics at the Children’s Hospital Informatics Program in Boston, Massachusetts. Palchuk’s program is offered through Harvard University and the Massachusetts Institute of Technology and funded by the National Library of Medicine.
Video had just killed the radio star, IBM was selling a product called the “PC,” and members of the Class of ‘81 were thinking about where they would spend their residencies.

When John Lantos, MD ’81, finished medical school at the University of Pittsburgh, he won awards for being an outstanding student of pediatrics and child psychiatry. He has kept up that pace since. Lantos is chief of general pediatrics at the University of Chicago. He was named one of Chicago’s best pediatricians by Chicago Magazine in 2000 and received the Community Peacemaker Award from the city’s Peace Museum in 1996.

His classmate, Deborah Warden, MD ‘81, has drawn on her undergraduate study of anthropology in her work as director of head injuries at Walter Reed Army Medical Center in Washington, DC. “It’s sort of like working with another culture,” she says of the army. Walter Reed receives worldwide referrals for head injury cases, and Warden is conducting research on the effectiveness of rehabilitation after traumatic brain injury. She teaches a Neurology for Psychiatrists class and is the coauthor of a recent Journal of the American Medical Association paper studying the rehabilitation of 120 military personnel who sustained head injuries.

Maybe someday she’ll be using tools her classmate Robert J. Sclabassi, MD ’81, develops. Sclabassi is a Pitt professor with joint appointments in the Departments of Neurological Surgery; Psychiatry; Biomedical, Electrical, and Mechanical Engineering; and Neuroscience (whew). He also directs the University’s Laboratory for Computational Neuroscience and has published many papers exploring the use of monitoring systems in neurophysiology and neurosurgery. We’re hoping the busy professor will have a chance to catch up with old friends at his class reunion this October. —EH

Pomp, ceremony, and ketchup. LEFT: Arthur S. Levine, dean and senior vice chancellor, was among the distinguished chefs flipping burgers for graduates at the Medical Alumni Association-sponsored senior class picnic in May. RIGHT: Michelle Agnew, holding daughter Alexandra, with Todd Green, MD ’01

FORE!

BY FRED SOLOMON

It was one of those snorting, squeaking coughs that a guy who just drowned his first tee shot in front of a dozen colleagues might mistake for a laugh. It inspired charity duffer and Integrated Case Studies (ICS) instructor Kevin O’Toole to reevaluate some things as he watched a dozen goslings trying to get back into formation on the water hazard.

“Remember when I said that it’s impossible to fail ICS?” he said, walking off the tee with his driver on his shoulder. “I’ve changed my mind about that.”

Unfortunate cougher and medical student Ron Trible didn’t look too worried even though he was about to start O’Toole’s case studies class. The watchword of the day, after all, was charity. Trible, MD ’03, and O’Toole, MD ’83, were part of a 52-person strong contingent of Pitt students, faculty, and alumni playing at Murrysville, Pennsylvania’s Meadowink Golf Club in the second annual Pitt Med Golf Outing. The daylong event, held in April, raised money for a School of Medicine scholarships and loans fund. According to outing organizer, Tony Mazzeo, MD ’02, the proceeds are put to good use:

“Some of us will graduate more than $160,000 in debt. The scholarship fund, which is completely student driven, helps students by offsetting some of that debt and makes the school’s student aid package more competitive.

“Last year we were able to offer deserving students several $2,000 awards thanks to the outing.”

Judging by the golf scores posted at day’s end, it’s clear last year’s award money didn’t go toward golf lessons.

IN MEMORIAM

‘30s
EDWARD J. CARROLL (MD ’34)
FEBRUARY 7, 2001

ALBERT GUY CORRADO (MD ’38)
FEBRUARY 22, 2001

JAMES H. MQUADE III (MD ’38)
APRIL 13, 2001

‘40s
JROHN P. GOFF (MD ’43)
AUGUST 21, 2000

LAIBE A. KESSLER (MD ’48)
APRIL 21, 2001

‘50s
JOHN A. MORTON II (MD ’50)
MAY 4, 1999

WILLIAM A. EILLER (MD ’51)
APRIL 25, 2001

JAMES E. CONKLIN (MD ’52)
MAY 8, 2001

ROBERT E. COTT (MD ’53)
OCTOBER 7, 2000

‘70s
JAMES L. OUGH (MD ’74)
OCTOBER 16, 2000

FACULTY
BRIAN V. JEGASOTHY
APRIL 20, 2001
Just off the main drag in Braddock, a Pennsylvania steel town filled with humble storefronts and houses leaning on their foundations, Paul Turnquist, MD '94, works in the emergency room of a small hospital and talks of, one day, working for NASA.

“I think our future, ultimately, is in space,” Turnquist says, his 47-year-old voice inflected with a boyish sense of possibility.

An air force man who once flew T-38 supersonic jets, Turnquist was already a commercial pilot for US Airways when he decided to become a doctor. Now, in tan pants and a tweed jacket, there is little to suggest he is a man who craves the adrenaline rush of fast-paced medicine or flight. Yet each week, Turnquist exchanges his physician’s white coat for a pilot’s black, dividing his time between the ER and an Airbus 330.

Turnquist’s wide face is striking in its lightness. He laughs in short, surprising bursts. His blonde hair and eyebrows are so light they nearly disappear above blue eyes; there is something almost airy about his presence. Yet Turnquist is a pragmatist.

“Physicians need to find out where they fit within the world of medicine to accomplish the most good,” Turnquist says, “and it’s not always the traditional path.”

Indeed, Turnquist’s journey has hardly been conventional or, for that matter, direct. Though he considered becoming a doctor as a young man, there was no precedent in his own family, no role model for him to follow.

“My father was an engineer, and no one in my family was associated with medicine,” Turnquist recalls. “I didn’t have the strong emotional push required to be a good medical student.”

That emotional push began to surface as his mother became ill, and Turnquist became intimately acquainted with hospitals and doctors’ offices and, he says, with the limits of medicine. Then his brother was diagnosed with Hodgkin’s disease. He survived thanks to a successful bone marrow transplant; that’s when the pilot saw medicine as a real possibility.

“When I was young I was excited about making a faster airplane, designing a spaceship,” Turnquist says, but his brother’s illness fueled a desire to work for others more directly.

That’s when he met Peter Lambrou, a man who embodied the marriage between medicine and flight. Turnquist had heard about this pilot who was also a physician, an aero-

“Every semester we’d scheme and plan to get Paul through med school while he was flying full-time.”

pilots need for certification to fly. As Lambrou sees it, Turnquist brings an expertise and empathy for each pilot’s situation that a physician trained in the academy alone would be hard pressed to match.
Consider this our version of Match Day. Your challenge: Match the graduates with their corresponding creatures. (Though they aren’t represented here, our controlled, double-blind study shows that Pitt med students also have cats. Our people just weren’t able to talk to their people in time for our editorial schedule.) For answers, see inside front cover.

Photography | Patricia Nagle